REMARKS

Claims 1-16 and Claims 21-24 remain in the application.

The Rejections:

In the Final Office Action dated July 31, 2006, the Examiner rejected Claims 10-13 and 21-24 under 35 U.S.C. 102(e) as being anticipated by Nakagaki et al. U.S. Patent No. 6598707.

Regarding Claim 10, the Examiner stated that Nakagaki discloses an elevator installation having a car, referred to as cage 20, and a counterweight 30 connected by a drive means, referred to as front and back hoist cables 50, 60, and movable in an elevator shaft comprising an elevator shaft 7, an elevator car 30 movable in the elevator shaft 7 along a pair of car guides 22, 23 mounted in the elevator shaft 7, a counterweight 30 movable in the elevator shaft 7 along a pair of counterweight guides 31, 32 mounted in the elevator shaft 7, a crossbeam, referred to as connecting beam 33, attached to the counterweight guides 31, 32 and one of the car guides 22, and a gearless drive motor, referred to as hoist 41, mounted on the crossbeam 33 for engaging the drive means 50, 60 and moving the car 20 and the counterweight 30 in the elevator shaft 7, the drive motor 41 being connected by a drive shaft 42, 43 to a pair of drive pulleys 44, 45 engaging the drive means 50, 60, the drive pulleys being adjacent one another and positioned on opposite sides of one of the car guides 22.

Regarding Claim 11, the Examiner stated that Nakagaki discloses two drive means 50, 60 connecting the car 20 and the counterweight 30, each drive means 50, 60 having two ends, referred to as anchoring ends 53, 57, 63, 67, and each of the ends 53, 57, 63, 67 being fixed to one of the car guides 23, via cage-side hitching beam 25, and the crossbeam 33.

Regarding Claim 12, the Examiner stated that Nakagaki discloses two drive means 50, 60 connecting the car 20 and the counterweight 30 and wherein the drive means 50, 60 are belts.

Regarding Claim 13, the Examiner stated that Nakagaki discloses the car 20 is suspended in the elevator shaft 7 with a 2:1 ratio and the drive motor 41 is arranged in a region above a travel path of the counterweight 30 in the elevator shaft 7, shown in Figures 1, 2, 4, and 5.

Regarding Claim 21, the Examiner stated that Nakagaki discloses an elevator installation having a car 20 and a counterweight 30 connected by a drive means 50, 60 and movable in an elevator shaft 7 comprising a pair of car guides 22, 23 adapted to be mounted in the elevator shaft

7, a pair of counterweight guides 31, 32 adapted to be mounted in the elevator shaft 7, a crossbeam 33 attached to the counterweight guides 31, 32 and one of the car guides 22, a drive motor 41 mounted on the crossbeam 33 and connected to a drive shaft 42, 43, a pair of drive pulleys 44, 45 adapted for engaging the drive means 50, 60 to move the car 20 and the counterweight 30 in the elevator shaft 7 wherein the drive pulleys 44, 45 are connected to the drive shaft 42, 43 and are positioned adjacent to one another on opposite sides of an imaginary line connector extending between the car guides 22, 23.

Regarding Claim 22, the Examiner stated that Nakagaki discloses the counterweight guides 31, 32 and the car guides 22, 23 are positioned at apices of a substantially horizontal triangle and end regions of the crossbeam 33 are fastened to respective ones of the counterweight guides 31, 32.

Regarding Claim 23, the Examiner stated that Nakagaki discloses a center region of the crossbeam 33 is attached to one of the car guides 22.

Regarding Claim 24, the Examiner stated that Nakagaki discloses the drive motor 41 is in an area of the triangle substantially above the counterweight 30.

The Examiner rejected Claims 1-4, 8 and 9 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Cox U.S. Patent No. 3559768.

Regarding Claim 1, the Examiner stated that Nakagaki discloses an elevator installation having a car, referred to as cage 20, and a counterweight 30 connected by a drive means, referred to as front and back hoist cables 50, 60, and movable in a shaft 7 comprising a pair of car guides 22, 23 adapted to be mounted in the shaft 7, a pair of counterweight guides 31, 32 adapted to be mounted in the shaft, a crossbeam, referred to as connecting beam 33, attached to the counterweight guides 31, 32 and to car guide 22, and a drive motor, referred to as hoist 41, mounted on the crossbeam 33 and coupled to a pair of drive pulleys, referred to as front and back traction sheaves 44, 45, adapted for engaging the drive means 50, 60 to move the car 20 and the counterweight 30 in the elevator shaft 7 wherein the drive pulleys 44, 45 are operatively connected by a drive shaft with the drive motor and a brake. The Examiner admitted that Nakagaki is silent concerning the drive pulleys are arranged between the drive motor and the brake on the drive shaft. Te Examiner stated that Cox teaches drive pulleys, referred to as traction sheaves 11, 25, arranged between a drive motor, referred to as electric motor 14, and a

brake, referred to as brake drum 15, on a drive shaft 12, 24, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the pulleys disclosed by Yasuda et al. between a drive motor and a brake as taught by Cox to equally distribute the load on the shaft between the drive motor, drive pulleys, and the brake.

Regarding Claim 2, the Examiner stated that Nakagaki discloses the drive pulleys 44, 45 are arranged on opposite sides of an imaginary line horizontal connector of the car guides 22, 23.

Regarding Claim 3, the Examiner stated that Nakagaki discloses the drive means are belts, referred to as front and back hoist cable 50, 60. The Examiner admitted that Nakagaki is silent concerning the drive pulleys are smaller in diameter than the drive motor and/or brake. The Examiner stated that Cox teaches drive pulleys 11, 25 are smaller in diameter than the drive motor 14 and brake 15, and it would have been obvious to one of ordinary skill in the art at the time of the invention to make the diameter of the drive pulleys disclosed by Nakagaki smaller than the drive motor and brake as taught by Cox because a smaller diameter sheave results in a reduced torque and an increased rotation speed of the drive motor, which increases the efficiency of the drive motor.

Regarding Claim 4, the Examiner stated that Nakagaki discloses the drive pulleys 44, 45 are arranged adjacent sides of one of the car guides 22.

Regarding Claim 8, the Examiner stated that Nakagaki further discloses the counterweight guides 31, 32 and the car guide 22 are positioned at apices of a substantially horizontal triangle and the crossbeam 33 is fastened at end regions to the counterweight guides 31, 32 and at a center region to the car guide 22.

Regarding Claim 9, the Examiner stated that Nakagaki further discloses the car guides 22, 23 and counterweight guides 31, 32 are arranged to extend substantially vertically in the elevator shaft and the crossbeam 33 is arranged to extend substantially horizontally in the elevator shaft.

The Examiner rejected Claims 5-7 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Cox, and further in view of Yasuda et al. U.S. Patent No. 6488124.

Regarding Claim 5, The Examiner admitted that Nakagaki is silent concerning the drive motor and the brake are mounted on a bracket fastened to the crossbeam. The Examiner stated that Yasuda teaches a drive motor 126 and a brake 118 are mounted on a bracket, referred to as support legs 120, fastened to the crossbeam 108, and it would have been obvious to one of

ordinary skill in the art at the time of the invention to mount the drive motor and the brake disclosed by Nakagaki on a bracket fastened to the crossbeam as taught by Yasuda to facilitate the connection between the drive motor and the brake, and the crossbeam.

Regarding Claim 6, the Examiner admitted that Nakagaki is silent concerning a bracket mounted at a center region of the crossbeam. The Examiner stated that Yasuda teaches the bracket 120 is mounted at a center region of the crossbeam 108, and it would have been obvious to one of ordinary skill in the art at the time of the invention to mount the bracket as taught by Yasuda at a center region of the crossbeam disclosed by Nakagaki to facilitate the connection between the drive motor and the brake, and the crossbeam.

Regarding Claim 7, the Examiner admitted that Nakagaki is silent concerning the drive pulleys arranged substantially in a region within an enclosure of the bracket. The Examiner stated that Cox teaches drive pulleys 11, 25 arranged substantially in a region within an enclosure of the brackets, not numbered but shown attached to of the elevator shaft shown in Figure 1, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive pulleys disclosed by Yasuda substantially in a region within an enclosure of the bracket to make the drive pulleys readily accessible with the bracket.

The Examiner rejected Claims 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Yasuda.

Regarding Claim 14, the Examiner stated that Nakagaki discloses a car 20 suspended in an elevator shaft 7 with a 2:1 ratio and a drive motor 41. The Examiner admitted that Nakagaki is silent concerning a drive motor arranged in a region above a travel path of the car. The Examiner stated that Yasuda teaches a car 101 suspended in an elevator shaft 103 with a drive motor 126 arranged in a region above a travel path of the car 101, shown in Figures 4-6 20, 21A, 21B, and 31-33, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive motor disclosed by Nakagaki in a region above a travel path of a car as taught by Yasuda to overcome elevator shaft size and shape constraints.

Regarding Claim 15, the Examiner stated that Nakagaki discloses a car 20 suspended in an elevator shaft 7 with a 2:1 ratio and a drive motor 41. The Examiner admitted that Nakagaki is silent concerning a drive motor arranged in a region above a travel path of the car and a travel path of the counterweight. The Examiner stated that Yasuda teaches a car 101 suspended in an

elevator shaft 103 with a drive motor 126 arranged in a region above a travel path of the car 101 and a travel path of the counterweight 102, shown in Figures 4-6 20, 21A, 21B, and 31-33, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive motor disclosed by Nakagaki in a region above a travel path of a car and a travel path of a counterweight as taught by Yasuda to overcome elevator shaft size and shape constraints.

Regarding Claim 16, the Examiner admitted that Nakagaki is silent concerning the car suspended in the elevator shaft with a 1:1 ratio and the drive motor arranged in a region above a travel path of the car. The Examiner stated that Yasuda teaches a car 101 is suspended in an elevator shaft 103 with a 1:1 ratio and the drive motor 126 is arranged in a region above a travel path of the car 101, shown in Figures 4-6 20, 21A, 21B, and 31-33, and it would have been obvious to one of ordinary skill in the art at the time of the invention to suspend the car disclosed by Nakagaki in an elevator shaft with a 1:1 ratio as taught by Yasuda and arrange the drive motor disclosed by Nakagaki in a region above a travel path of the car as taught by Yasuda et al. to overcome elevator shaft size and shape constraints.

Applicants' Response:

The Examiner rejected Claims 10-13 and 21-24 as being anticipated by Nakagaki. Nakagaki shows a driving unit **40** with a drive motor **41** including a brake and connected to a pair of drive pulleys **44, 45** arranged at the extremities of the drive. The drive pulleys **44, 45** are arranged at a significant distance from each other. This distance is approximately the width of the counterweight **30** and the drive pulleys **44, 45** are separated by the motor **41**. This is not only a preferred embodiment, it is the only solution shown by Nakagaki. All the figures of Nakagaki show widely spaced drive pulleys to allow an arrangement of the drive motor and brake between the drive pulleys and to get a stable suspension of the car.

Nakagaki emphasizes (Col. 3, Lines 30-35) that it is preferred to dispose four car sheaves **26, 27, 28, 29** at the four corners of the floor of the car **20** to get a stable suspension of the car. Thus, the entire teaching of Nakagaki is that the car sheaves, the drive means and consequently the drive-pulleys are widely spaced to the extremities of the drive and the four corners of the car.

Applicants' independent Claims 10 and 21 recite a pair of drive pulleys arranged **adjacent** to each other. The term "adjacent", when applied to two objects, is commonly

understood to mean that the objects are in close proximity without anything significant between them. See the following definitions:

Encarta® World English Dictionary, North American Edition

http://encarta.msn.com/encnet/features/dictionary/DictionaryResults.aspx?refid=1861583686

> **1. neighboring:** situated near or close to something or each other, especially without touching
>
> **adjacent** or **adjoining**? Two houses are said to be adjoining when they are next to each other with a common wall. Adjoining tables are next to each other, end to end, forming one surface (they are, to use a more technical word, *contiguous*). In other words, adjoining items *join*. Adjacent houses, on the other hand, can have a space between them or even be on opposite sides of the road, as long as there is nothing significant between them (such as another house) and they are close enough for you to pass easily from one to the other. Adjacent tables are next to each other but not necessarily touching. Note also that adjoining, being a form of a verb, can govern an object (*the house adjoining ours*), whereas adjacent needs the addition of *to* (*the house adjacent to ours*).

Merriam-Webster's Online Dictionary, 10th Edition

http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=adjacent

> **1 a** : not distant : **NEARBY** <the city and *adjacent* suburbs> **b** : having a common endpoint or border <*adjacent* lots> <*adjacent* sides of a triangle> **c** : immediately preceding or following.
>
> **synonyms** ADJACENT, ADJOINING, CONTIGUOUS, JUXTAPOSED mean being in close proximity. ADJACENT may or may not imply contact but always implies absence of anything of the same kind in between <a house with an *adjacent* garage>. ADJOINING definitely implies meeting and touching at some point or line <had *adjoining* rooms at the hotel>. CONTIGUOUS implies having contact on all or most of one side <offices in all 48 *contiguous* states>. JUXTAPOSED means placed side by side especially so as to permit comparison and contrast <a skyscraper *juxtaposed* to a church>.

As used in Applicants' specification and claims, the term "adjacent" must be understood in the sense of the drive pulleys being closely spaced at a distance corresponding to a width of the car guide rail. Using this configuration, the introduction of the suspending force to a drive support is concentrated to a middle zone and it is easily possible to lead the supporting force to

one of the car guides which acts as a supporting column. Therefore, the size of the drive unit can be reduced.

The claimed invention is different from Nakagaki that has a long drive motor with two drive pulleys arranged at the extremities of the drive, at a wide distance apart, to support the car body near the four corners. In contrast, the drive according to Claims 10 and 21 has two drive pulleys arranged adjacent, respectively in a distance corresponding to a width of a car guide rail, and the corresponding drive means supports the car near the centerline of the car. Thus, the claimed drive is small and transmits supporting forces through the center part of the support to the car guide.

Yasuda, which is very similar to Nakagaki, has drive pulleys which are clearly located on or outside the edges of the car. In all figures and also in the description it is clear that the traction sheaves attached to the two ends, respectively to the extremities of the hoisting device, are placed near wall surfaces of the elevator shaft, which are adjacent to a wall surface facing the counterweight (Col. 6, Line 64 through Col. 7, Line 11).

Neither Nakagaki nor Yasuda leads to a solution with two drive pulleys arranged adjacent to one another as recited in Applicants' Claims 10 and 21.

The Examiner rejected claims 1-4, 8 and 9 as being unpatentable over Nakagaki in view of Cox. As discussed above, Nakagaki shows in all embodiments (not only as a preferred embodiment, there is no other embodiment!) drive pulleys which are arranged at the extremities of a drive and which are widely spaced to get a stable suspension of the car (Col. 3, Lines 30-35). Cox shows a single traction sheave **11** connected between an electric motor **14** and a brake drum **15** by a shaft **12**. The Examiner suggested it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the pulleys disclosed by Yasuda (Nakagaki ?) between a drive motor and a brake as taught by Cox to equally distribute the load on the shaft between the drive motor, drive pulleys, and the brake. However, Nakagaki teaches (Col. 3, Lines 30-35) that it is preferred to dispose four car sheaves **26, 27, 28, 29** at the four corners of the floor of the car **20** to get a stable suspension of the car. Thus, the entire teaching of Nakagaki is that the car sheaves, the drive means and consequently the drive-pulleys **44, 45** are widely spaced to the extremities of the drive and the four corners of the car. Thus, there is no motivation to

substitute the Cox configuration and lose the Nakagaki advantage of a stable suspension of the car.

The Examiner stated that arranging the pulleys disclosed by Yasuda (Nakagaki?) between a drive motor and a brake as taught by Cox would result in the advantage of equally distributing the load on the shaft between the drive motor, drive pulleys, and the brake. However, the Examiner did not explain how such a configuration could be achieved. Nakagaki shows a hoist **41** that appears to include an integral motor and brake. Thus, it is impossible to position the drive-pulleys **44, 45** between the motor and the brake as suggested by the Examiner.

If one were to substitute the electric motor **14** and the brake drum **15** of Cox for the Nakagaki hoist **41**, the advantage of equally distributing the load as suggested by the Examiner would not be achieved. The Cox motor **14** is supported on the top wall of the elevator shaft and does not load the drive shaft **12**. The brake **15** is also supported by the top wall of the elevator shaft and does not load the drive shaft **12**. Thus, only the hoist ropes **10** trained over the traction sheave **11** are applying a load to the drive shaft **12** and there is no "equally distributing the load on the shaft between the drive motor, drive pulleys, and the brake" as suggested by the Examiner.

In view of the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.